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JPRS Report

Nuclear Developments

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NUCLEAR DEVELOPMENTS

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NUCLEAR TEST RUMORS

Paris THE INDIAN OCEAN NEWSLETTER in English 6 Jun 87 p 3

[Text] A recent article in the French weekly news magazine L'Express has led to a resurgence of speculation over the possibility that one of the island's of the French Antarctic Territories in the southern Indian Ocean will replace the Pacific atoll of Muroroa as France's nuclear weapons test site. The article, which was reproduced on page 1 of the Mauritian daily Le Mauricien and in the Reunion Communist party publication Temoignages, followed a report by Francois Fillon, chairman of the French national assembly's committee on defence and the armed forces, after a visit to Muroroa which coincided with a nuclear test on May 20. Mr Fillon, a member of the governing Rassemblement pour la Republique, said that cracks in the atoll's coral base were causing it to sink into the sea and a new testing site must be found. The French Communist party daily L'Humanite also seized on Mr Fillon's report to demand an end to the nuclear tests. L'Express stated that the French authorities were considering a base in the Indian Ocean on the Kerguelen or Crozet islands and suggested that the Australian-skippered trawler Southern Raider which was sunk by the French navy last October (see ION No 252, 253) was on a spying mission. However, the French defence minister insisted on June 3 that Muroroa would remain the only nuclear testing site.

In Reunion the reports fuelled the debate which erupted last February with the despatch of a scientific expedition to the Kerguelen islands (see ION No 269). This expedition had the task of studying the transmission of seismic waves caused by explosions in the rock but there was no attempt at the time to keep the experiments a secret. Officially, it was part of a programme by the administration of the Antarctic territories begun in 1962 to study the soil of the archipelago. In Mauritius an anti-nuclear group calling itself Disarm the Seas intends to campaign against any French plan to transfer the nuclear test site from Muroroa to the Indian Ocean.

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CSO: 51000042

EDITORIAL ALARMED AT U.S.-JAPAN PLUTONIUM OVERFLIGHT DEAL

Toronto THE GLOBE AND MAIL in English 30 Jul 87 p A6

[Editorial]

[Text]

While the federal government has been ruminating about spending billions to equip itself with nuclear-powered submarines to protect Canada's Arctic sovereignty, the United States and Japan have been quietly concluding a deal to run a few shipments of deadly plutonium across the Canadian north. Canada has not been consulted about this arrangement. Nor do federal officials seem concerned about the oversight.

The plan is considerably more hazardous than the 1985 trip taken by the U.S. vessel Polar Sea through the Northwest Passage. Yet the voyage of the Polar Sea stirred up a significant political furor, prompting External Affairs Minister Joe Clark to start talking about enforcing Canadian sovereignty over Arctic waters. The plutonium shipments seem to inspire nothing more than a yawn.

The US.-Japanese deal was described in The Globe and Mail this week by Thomas F. Homer-Dixon and Carolyn W.B. Lee, two Canadian PhD candidates at the Massachusetts Institute of Technology's Defence and Arms Control Program. According to their research the plan is to fly plutonium waste products from Europe to Japan, across northern Canada. The waste is produced by Japan's nuclear power plants, reprocessed in Europe, and then shipped back to Japan. The United States supplies Japan with nuclear fuel, and under the terms of the agreement between the two countries, any plan for reprocessing or disposing of the nuclear wastes must have U.S. approval.

The scheme will require something like two flights a month, each carrying about 220 kilograms of plutonium, beginning in the early 1990s and continuing to the end of the century. Special casks are being designed to carry the plutonium, casks that are supposed to be able to withstand an enormous impact in the event that the cargo plane carrying them crashes. Whether they can be made strong enough is not certain.

The resilience of the casks is crucial, since the alpha radioactivity (the most deadly form) of the plutonium carried on one transport flight will equal one-quarter of the alpha radioactivi-

ty dispersed from all atmospheric nuclear tests to date. Canada will be consulted about the design of the casks, but only after Japan and the United States have signed their deal. Canada will also be consulted about the route to be used, but only after the deal is concluded.

That gives Canada very little say in the whole operation. The federal government might well object to the route, or the design of the casks, but its objections are unlikely to have much effect if Japan and the United States are determined to proceed.

The voyage of the Polar Sea was a symbolic affront to Canada's sovereignty. The planned shipments of plutonium are a potential environmental and health hazard of some substance. That the United States and Japan are prepared to arrange shipments over the Canadian north without making Canada a party to the deal is another worrying assault on Canada's right to control its own territory.

Even more alarming, Canada does not seem to care. The federal government is not without options. It can legally refuse the flights. So far it has shown no inclination to do that, or to use its power in the matter to force its way into the negotiations.

If federal outrage over the voyage of the Polar Sea was more than huffing and puffing, surely the government cannot stand by now and let outside nations conclude deals involving Canadian territory without something so fundamental as Canadian permission. The alternative is to let federal concern about sovereignty degenerate into a rather painful joke.

/9317
CSO: 5120/13

YELLOWKNIFE CENTER MONITORS WORLD NUCLEAR ACTIVITY

Vancouver THE SUN in English 18 Jul 87 p B6

[Article by Anne McIlroy]

[Text]

OTTAWA — Using a scientific device more than 3,000 kilometres away, scientists here are monitoring the machinations of the world's nuclear powers.

By analysing vibrations in the Earth's crust recorded at a huge monitoring network near Yellowknife, Ottawa earth physicist Robert North knows, beyond a doubt, that on April 17, at 8:03:05 a.m. precisely, an underground nuclear explosion rocked a test site in Soviet Central Asia.

He knows that almost 24 hours later a blast of the same magnitude, about five kilotonnes, sent shock waves from a U.S. test site in the Nevada desert.

And if the world powers ever agree to a total ban on nuclear testing, North or other Energy, Mines and Resources scientists will know if someone breaks it.

Since the first nuclear explosions, there have been a number of attempts to ban the testing of nuclear weapons. In 1963, the U.S., Soviet Union and Britain signed a treaty limiting their activities to underground tests, which don't shower radiation and fallout on the Earth.

The Yellowknife centre, known as a seismic array, could become a key part of an international verification network, which is a prerequisite for a complete test-ban treaty, says Peter Stibrany, of the External Affairs' verification research unit.

Energy, Mines and Resources and External Affairs are spending $3.2 million over three years to improve the facility, sharpening its monitoring abilities and linking it directly to Ottawa by satellite so data can be transmitted here in seconds.

The work means the array will be sophisticated enough to become a key part of an international monitoring network, should the superpowers agree one is needed.

Strung over 20 kilometres of stable rock near the Arctic Circle, the array is one of only eight in the world sensitive enough to tell the difference between nuclear explosions and earthquakes.

Set on an old, relatively uniform geological structure called the Precambrian Shield, it is removed from sources of background noise such as oceans and cities.

More important, it is less than 10,000 kilometres from nuclear testing sites in the Soviet Union, China, French Polynesia and the Nevada desert.

The array can detect, with 90-per-cent accuracy, any blast equivalent to five kilotonnes of dynamite or more set off anywhere in the Northern Hemisphere.

Such a blast has a quarter of the explosive power of the bomb dropped on Hiroshima, Japan, in 1945.

Anne McIlroy is science reporter for The Ottawa Citizen.

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CSO: 5120/13

ONTARIO HYDRO TO REBUILD FOUR MORE REACTORS

Toronto THE GLOBE AND MAIL in English 16 Jul 87 p A10

[Article by Christie McLaren]

[Text]

Ontario Hydro, which has just gutted and rebuilt two nuclear reactors for the first time, is now planning to embark on a multi-million-dollar program to rebuild at least four more reactors.

Work on two of the four is expected to begin in the late 1990s.

In the past, engineers at the Crown corporation have talked about performing a major rebuilding of nuclear-reactor cores. However, this is the first time they have acknowledged that it is necessary and have set dates to do the jobs.

Rebuilding the nuclear reactors will cost in the hundreds of millions of dollars. Users of electricity in Ontario will end up footing the bill.

Over the past four years, in an unprecedented experiment, Ontario Hydro replaced all 780 worn-out metal "pressure" tubes that held radioactive bundles of fuel in the cores of two Candu reactors at the Pickering A Generating Station east of Metro Toronto.

The project cost an estimated $441-million — $41-million more than what it cost to build the two reactors.

(One reactor will officially reopen this week, but will not start generating power until late summer. The second one will generate power early next year.)

Ontario Hydro was forced to rebuild the reactors' honeycomb-like cores after a tube in one reactor ripped open on Aug. 1, 1983, sending thousands of litres of boiling radioactive water gushing into a nearby machine room.

It is the most serious accident to date in a Canadian-built Candu reactor.

Now, Hydro officials say, they will probably gut and rebuild two more reactors at the same plant — Units 3 and 4 — in the late 1990s. The estimated cost is $210-million.

But next time, they plan to replace not only the pressure tubes but also the matching "calandria" tubes that surround them, William Morison, Ontario Hydro's chief engineer and one of the designers of the Candu, said in a recent interview.

"I think we ought to be able to do it for something like half the cost next time," he said.

The Pickering reactors will be followed by two more reactors — and possibly four more — at the Bruce A Nuclear Generating Station on Lake Huron in Southwestern Ontario.

"We're planning to re-tube our reactors in 2001 and 2002," Robert Coutts, the station manager, said in an interview yesterday.

The federal Atomic Energy Control Board, which regulates Canada's nuclear industry, says radiation protection procedures mean that dismantling and rebuilding nuclear reactors poses no major safety problems for workers or the public.

"When the time comes, we'll almost certainly say yes, go ahead," Zygmond Domaratski, head of AECB's reactor regulation directorate, said in an interview.

The reactors must be rebuilt because over time, the tubes that make up the fuel channels become worn-out and warped, Mr. Morison and Mr. Coutts said.

Each six-metre-long pressure tube carries 272 kilograms of uranium fuel divided into 12 separate steel-wrapped bundles. The fuel bundles are surrounded by heavy water that circulates constantly to cool the core, carrying the heat away to boil water.

Each pressure tube, meanwhile, is surrounded by a slightly larger calandria tube. Spacers separate the two tubes and gas is circulated between them to detect any leaks in the pressure tube.

Over the years, these tubes sag from the weight of the fuel. The pressure tubes also become brittle from neutron bombardment and chemical changes while pressure makes them stretch lengthwise.

"We've got a limited amount of room to allow it to expand," Mr. Morison said. "When we reach that point, we've got to decide what we're going to do — shut (the reactor) down, or take the tubes out and put new ones in."

Mr. Coutts said that at the Bruce station, Units 1 and 2 will definitely be rebuilt, Unit 3 will "probably" be rebuilt to replace stretched tubes, and Unit 4, which was designed to deal with the stretching, may last "a little longer."

After the 1983 accident, investigators found that up to a third of the pressure tubes in Pickering's Unit 1 and 2 reactors could have failed at any time. The tubes were then 12 years old, while reactors were supposed to last about 30 years, perhaps with one retubing.

The pressure tube that ruptured failed because spacers separating it from the cooler, surrounding tube slid out of place, allowing a mix of hot and cold. This led to chemical changes that caused a series of "blisters" along the pressure tube, eventually weakening it enough to crack under the pressure.

The worn-out tubes were replaced with new tubes made of a different metal alloy, which Hydro says are far less prone to ruptures. However, these tubes, which are currently in all Hydro's reactors, still stretch lengthwise.

Last year, Hydro told an Ontario Legislature committee that its reactors now have a lifespan of about 40 years.

However, Brian Charlton, energy critic for the Ontario New Democratic Party, said in an interview that he is not convinced that the new pressure tubes will last any longer than the old ones.

Last year, one of the new metal pressure tubes ruptured in a reactor at the Bruce station after 10 years. Hydro officials blamed a manufacturing defect.

Mr. Charlton said continuing problems with pressure tubes in Hydro's reactors mean that the reactors will probably have to be rebuilt more than once if they are to last 40 years.

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CSO: 5120/12

DEMONSTRATORS PROTEST U.S. NUCLEAR VESSELS VISITS

Nuclear Submarine

Vancouver THE SUN in English 22 Jul 87 p C11

[Article by Patti Flather]

[Text]

A demonstrator was arrested Tuesday night after a man climbed onto the back rudder of a U.S. nuclear submarine in Nanoose Bay on Vancouver Island.

Brian Mills, 36, of Denman Island, was charged with mischief.

The arrest followed a protest against the presence at the Canadian Forces naval facility of the USS Guardship, a Thresher-class sub capable of carrying nuclear missiles.

Miriam Leigh, a member of the Nanoose Conversion Campaign, said in a telephone interview that nine protesters in two vessels came within 100 metres of the submarine at about 9 p.m. Tuesday.

One demonstrator in a dinghy and another in an inflated rubber boat then left from the larger boats and tried to approach the 89.4-metre submarine, she said, while military personnel in Zodiacs tried to stop them.

Leigh, from Denman Island, said the group was tipped off Monday by one of its "sub-watchers" along the coast that the submarine had arrived and decided Tuesday to attempt to deliver a letter to the submarine commander. The NCC maintains a house near Nanoose Bay and first set up a peace camp in the area in 1985.

Navy Frigate

Ottawa THE OTTAWA CITIZEN in English 25 Jul 87 p A12

[Excerpt]

VANCOUVER (CP) — Two Greenpeace members were arrested after they attempted to prevent a U.S. navy frigate from docking at a North Vancouver pier Friday.

Arne Hansen and Bill Gardener were charged with dangerous operation of a motor vessel after they jumped from their zodiacs as the *USS Gray* pulled into dock.

Greenpeace spokesman Simon Waters — one of two Greenpeace protesters who climbed Lions Gate Bridge last week to suspend a "nuclear free seas" banner — said he was appalled that the U.S. crew risked human life by "squeezing" three Greenpeace vessels between the pier and the ship.

They were protesting what they believed was the presence of nuclear-capable warships in Vancouver

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CSO: 5120/13

NUCLEAR PROTESTERS CHARGED FOR CLIMBING VANCOUVER BRIDGE

Ottawa THE OTTAWA CITIZEN in English 17 Jul 87 p C19

[Text]

VANCOUVER (CP) — Two members of the Greenpeace environmental organization climbed down into the arms of the law Thursday after spending a night dangling from the Lions Gate bridge to protest warships with nuclear arms.

Simon Waters, 40, and Bill Gardiner, 32, were met by Vancouver police officers at the road level of the three-lane bridge which spans Burrard Inlet and placed under arrest.

They climbed 60 metres into the bridge's suspension cables Wednesday and unfurled a banner reading Nuclear Free Seas. The banner, which was left for Highways Ministry crews to remove, was aimed at 16 warships headed here for the city's sea festival.

The pair said they came down after learning the naval vessels entering the harbor would not be carrying nuclear arms.

On Wednesday, police charged three men and a woman with climbing a bridge or a structure, an offence under the Highways Act, after the protesters chained themselves to the bridge support tower to prevent police from apprehending the climbers.

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CSO: 5120/12

TESTS CONFIRM DETERIORATION OF ROLPHTON PRESSURE TUBES

Ottawa THE OTTAWA CITIZEN in English 15 Jul 87 p B3

[Article by Mark Kennedy]

[Text]

TORONTO — The fate of Rolphton's 25-year-old nuclear reactor is still unknown after a meeting here Tuesday of Ontario Hydro and Atomic Energy of Canada Ltd. officials.

Management representatives from the two public agencies reviewed the results of tests on pressure tubes taken from the Nuclear Demonstration Plant.

When the reactor was closed for routine maintenance in late May, tests found certain tubes were more corroded than expected. These tubes carry the heavy-water coolant in the reactor core.

The corrosion means the tubes might rupture while the reactor is in operation.

At the meeting Tuesday, AECL and Hydro officials concluded the tests confirmed deterioration of the tubes. But they have not yet decided whether the problem is serious enough to warrant closing the reactor for good.

In a terse three-sentence statement, Hydro said the metallurgical tests "have confirmed some deterioration" and that AECL and Hydro senior management "will now be assessing the implication of the technical review for continued operation" of the reactor.

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CSO: 5120/12

CONSTRUCTION OF MAPLE PROTOTYPE REACTOR ON HOLD

Toronto THE GLOBE AND MAIL in English 23 Jul 87 p B14

[Article by Robert Kozak]

[Text]

In the early 1980s, Atomic Energy of Canada Ltd. hoped to cash in on a growing market for medical radioisotopes.

But the reactor they designed for nuclear medicine and industrial applications — the little-known, patriotically named Maple — has suffered several setbacks. Construction of a prototype reactor is on hold while AECL reviews the project's mandate.

The Maple has undergone several design changes since it was first proposed.

Developed for the export market, the reactor is small; the latest design version makes it a 10-megawatt unit (in contrast to the 600-megawatt output of a Candu). Potential customers, including Colombian officials, have been attracted by the idea of a device, costing $5-million to $10-million, that could provide large-scale radioisotope production.

The closest step to a potential sale was made with Atomic Energy Corp. of South Korea. AECL, which develops and markets nuclear equipment, entered into "a commercial agreement for a conceptual study for a Maple with (South) Korea," according to its 1985-86 annual report.

That study, now complete, involves a transfer of AECL's technology to the South Koreans for a customized 30-megawatt unit to be used in that country's ambitious nuclear program to simulate the radiation of a large, power reactor, in order to test components.

Still, despite contract work done, "the construction of the reactor has been put on hold," confirmed Peter Harvey, general manager of Chalk River Nuclear Laboratories, northwest of Ottawa.

AECL had originally designed the reactor to meet its own needs for radioisotope production and to have other features that are described as useful but not essential.

Now, the Maple will not have such capacities as neutron radiography (an imaging process) or the ability to extract neutron beams to test industrial components.

The larger reactor would have required a containment building about 50 per cent bigger than the structure needed for the current version. This would cost more to produce and AECL has undergone budget cutbacks.

Chalk River Labs, the research branch of AECL, was reorganized in 1985 and its financing for research and development was decreased by $12-million in 1986. AECL called upon end-users of its nuclear R&D to help with financing but, said Dr. Harvey, "we have not been successful in getting full funding."

At one time, construction of an operational Maple prototype was expected to take about three years, with work beginning in 1985. Devel-

opment teams were assembled in 1983.

AECL had originally looked on the Maple as a replacement for its aging NRX, a 42-megawatt research reactor. That device began service at Chalk River in the 1940s.

But costs escalated for a reactor that could serve both as a replacement for the NRX device and as a supplier of isotopes for AECL's potential customers.

However, officials express confidence the project will continue.

"Before we start the major construction, the design will have to meet projections of isotope production," Dr. Harvey said. "There will be construction, and it will be completed on schedule by 1990 so we can demonstrate a working prototype to customers."

At one time, AECL also hoped that sales of the Maple reactors would help it break into markets and establish a clientele for its much larger, power-producing Candu devices.

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CSO: 5120/13

TWO REBUILT REACTORS LACK SECOND FAST SHUTDOWN SYSTEM

Ottawa THE OTTAWA CITIZEN in English 24 Jul 87 p A3

[Text]

TORONTO (CP) — The federal government allowed two nuclear reactors to be rebuilt in Ontario with only one fast emergency shut-off system each — despite official guidelines that call for two.

The reactors, operated by Ontario Hydro at Pickering, are not quite as safe as newer ones with two fast shutdown systems, an official of the Atomic Energy Control Board said in an interview Thursday.

But the control board believes they are safe enough.

"We have to say it's less safe to a certain degree," said Joseph Molloy, an official in the board's division of components and quality assurance.

But "we wouldn't license it unless we, and the board members, felt it was safe enough," he added.

The reactors — No. 1 and 2 at the Pickering A Generating Station on Lake Ontario east of Toronto — have been closed for four years while Ontario Hydro gutted and rebuilt them after a 1983 accident.

The decision to replace all 780 pressure tubes at the Pickering nuclear plant came after an investigation into the Aug. 1 rupture of a tube in Unit 2. The rupture, the worst accident in the station's history, spewed out radioactive heavy water. There were no injuries.

The control board approved the renovations and relicensed the reactors late last year, anticipating they will start operating again this summer and next winter.

Since 1970, the federal control board has required all reactors to have two emergency shutdown systems, as recommended by the Candu reactor's designers.

Molloy said the guidelines are not law. They call for the two fast-acting systems developed by the reactor's designers to shut off the reactors automatically in the event of an accident.

In the mid-1970s, Molloy said, board members decided not to require the installation of a second fast shutdown system in reactors that were already built because it would have been technically difficult, would have exposed workers to radiation, and could have caused new problems with the reactors' design.

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CSO: 5120/13

PROCESS FOR DRAFTING DAYA BAY CONTINGENCY PLAN TOLD

Hong Kong HONGKONG STANDARD in English 13 Jul 87 p 3

[Article by Juanito Concepcion]

[Text]

THE Government wants to have the first draft Daya Bay contingency plan in place as soon as possible and will set about preparing it as soon as a comprehensive report from a British consultant is received.

The report, by the UK Atomic Energy Authority, is due late next month or in early September.

According to the Principal Assistant Secretary of the Economic Services Branch, Mr John Wilson, the first draft contingency plan could be established only after the Government had implemented recommendations made in a report.

The contingency plan would spell out various measures the Government would order to be taken in case of an accident at the $28.7 billion nuclear plant now being constructed at Daya Bay in China. The plant is about 30 kilometres away from densely populated areas in the southern New Territories.

All concerned agencies would be involved in the draft plan that would have to be tested, refined, updated and finally established before the nuclear plant becomes operational in 1992, he said.

The principal objective of this exercise, he pointed out, was to ensure that a properly-tested contingency plan was in place. Equally important was that the plan be totally satisfactory to the Government in terms of effectively responding to any situation or accident that may occur at the plant.

However, Mr Wilson was unable to give a specific time frame for the setting up of the draft contingency plan. This, he said, would depend primarily on when the Government could implement all the UKAEA recommendations.

"After we've seen the report and the volume of work that we need to do to modify existing structures and arrangements, we will have a clear idea of how long it will take to produce the first contingency plan," he said.

The Government, he said, would not lose any time working on the plan even though the Daya Bay nuclear plant was due to start functioning in 1992, he said.

Mr Wilson anticipated that the UKAEA would likely recommend further expansion of existing facilities in Hongkong, such as the Royal Observatory that would function primarily as a monitoring and assessment centre.

He also expected the UKAEA to recommend expansion of monitoring of food, water and milk as a measure against possible nuclear contamination.

The UKAEA was also expected to make recommendations on steps the plant's management could take to check against possible human error.

"Based on preliminary discussions recently with our consultants, many essential elements that need to be established to make contingency plan arrangements operational in Hongkong are already in existence," he said.

He also stated that various contingency measures contained in a report which he submitted a few months ago for consideration by the Omelco ad hoc group on Daya Bay did not reflect the official Government position.

These measures were merely culled from safety manuals of international agencies, such as the International Atomic Energy Authority, he said.

The proposed measures included evacuation of people in case of a nuclear accident and ordering them to remain indoors. These measures, he said, would likely be elaborated on in the UKAEA report, taking into account the conditions in Daya Bay and surrounding areas.

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CSO: 5150/0168

BRIEFS

NUCLEAR EDUCATION CAMPAIGN--The first-ever nuclear energy public education campaign in Hongkong is all set to be launched in September. Government officials of an inter-departmental committee are putting the final touches to the first phase of the large scale project. Mr George Yuen, chief information officer in charge of publicity promotions, said the campaign was a long-term project which would focus this year on radiation. A major task for the group is to inform the public on what they should do in a nuclear emergency. This will be done after the contingency measures have been finalised but before the Daya Bay plant comes on line in 1992. The Government intends to publicise the main features of the contingency plan through the mass media and pamphlets to be distributed to every household. The Education Department has come up with its own slide sets, video tapes and teaching kits to help students better understand nuclear energy related topics. [Excerpts] [Hong Kong HONGKONG STANDARD in English 18 Jul 87 p 5] /9317

RADIATION FEARS--The complicated and expensive bone marrow transplant operation will be developed in Hongkong within two years, partly out of fear of radioactive accidents, according to a paediatrician at the Chinese University's medical school. Dr Patrick Yuen said yesterday the operation was not designated a priority previously because of the huge resources required. But the local medical sector began developing facilities for the transplant procedure after the nuclear disaster at Chernobyl in the Soviet Union in April last year. [Excerpt] [Hong Kong SOUTH CHINA MORNING POST in ENglish 30 Jul 87 p 1] /9317

CSO: 5150/0180

ATOMIC COMMISSION GRANTED FUNDING FOR PROJECTS

PY300318 Buenos Aires TELAM in Spanish 0128 GMT 30 Jul 87

[Text] Buenos Aires, 29 Jul (TELAM) -- The National Commission for Atomic Ener (CNEA) will be able to continue with its main projects, such as the Atucha II nucle plant, the Arroyito Heavy Water Plant (PIAP), and the Tandar Particle Accelerator, d to an agreement reached with Economy Ministry officials for the appropriation of fun for the remainder of this year and 1988.

This announcement was made tonight by CNEA President Ema Perez Ferreira during a ne conference that was attended by local industralists and nuclear energy researchers.

Ema Perez Ferreira said that the talks with the Economy Ministry were difficult, b ultimately successful because an agreement in principle was reached with the compani under contract with the CNEA, which have not been paid since early this year, and al with the low-income technical personnel.

A consultative council, which was created at the suggestion of President Alfonsin a includes representatives of various sectors of the nuclear industry, is discussing n only salaries but also institutional aspects, such as the need to search for genui resources. Contacts with the Foreign Ministry, through which the cooperation a international trade agreements are made, have also been resumed.

Perez Ferreira labeled as nonsense, charges that the visit by Brazilian President Jo Sarney to the nuclear laboratory in Bariloche resulted in technological secret obtained with research paid for by taxpayers, being handed over.

Perez Ferreira said some people prefer making absurd statements -- it is impossible get information on the gas fusion technique in such a short time -- instead emphasizing the peaceful use of the uranium enrichment technology and the fact that tl international community respects the integrity and coherence of our programs, tl quality of production, and the security of Argentina's nuclear installations.

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CSO: 5100/2130

PRIVATE CAPITAL, CNEA TO SHARE DEVELOPMENT PLAN

PY131904 Buenos Aires CLARIN in Spanish 12 Aug 87 pp 26, 27

[Text] Emma Perez Ferreira, head of the National Commission for Atomic Energy (CNEA yesterday addressed a group of businessmen called by the Argentine Construction Boar She discussed the emphasis the CNEA will place on negotiations with private contracto to continue the construction of the Atucha II atomic power plant, the Heavy Wat Industrial Plant, and the encouragement the CNEA will give to private investors t participate in these joint ventures.

Regarding the CNEA's relationship with local firms in the nuclear sector, Emma Pere admitted "they were going through a difficult period and a lot of imagination and wo is necessary to overcome it." She added that the CNEA "is contacting private firms t agree on future actions, within the framework of the well-known financial situation.' Regarding labor problems at the Atucha II power plant during the past 10 days, Emm Perez admitted "there has been a work stoppage at the consortium COCA II, which i responsible for the civil work," and explained the difficulty stemmed from a conflic with workers and the delay in reaching a serious level of negotiation. When aske about agreements with Brazil, Emma Perez said the CNEA will meet with Brazilian expert next week to study proposed practical undertakings.

Regarding the relation the CNEA wants to have with private firms, Emma Perez sai relations "should not only emcompass reasonable schedules for finishing presen contracts, but should also include the growing participation of the private sector i the nuclear field." She added that "the CNEA would contribute with technologica know-how while the private sector would cooperate in the productive activities." Emm Perez said the CNEA board of directors is presently discussing this topic. She adde that the board is also contemplating the integration of a nuclear power plan construction firm which would involve the CNEA and private companies.

Emma Perez was asked if the scheme under consideration included joint ventures like t CONUAR [Argentine Nuclear Fuel Corporation, Inc.] scheme -- where the CN participation with 25 percent and the rest is in private hands. She said CONUAR was good example of what they are looking for: In CONUAR the CNEA provides the technolo while production is taken care of by the private sector."

This topic points toward a very important reorganization of the CNEA. The subject wi be taken up by the next Congress of Objectives and Institutional Policy (COI [Congreso de Objectivos y Politica Institutional]. Delegates from the Professiona Association, the Association of Technicians, the ATE [Association of State Workers] the UPCN [National Civil Service Personnel Union], the Atomic Energy Labor Union a authorities from the CNEA will participate in the event. The meeting will discuss long list of items, including the structural organization, specific policies f investments, development and engineering, productive areas, human resources, a security. According to the document convening the meeting, this is the proper forum discuss an eventual increased participation of the private capital in the nucle sector.

/9738
CSO: 5100/2132

BRIEFS

NUCLEAR INFORMATION EXCHANGE--Buenos Aires, 30 Jul (DYN)--The Argentine Foreign Ministry has reported that Argentine and Uruguayan diplomats yesterday launched a program for the exchange of information on nuclear affairs and disarmament. The Argentine Foreign Ministry also announced the program will include lectures on the organization and activities of the department that handles nuclear and disarmament issues, and on the main aspects and objectives of Argentina's foreign policy pertaining to international nuclear affairs. The Argentine position regarding international treaties, such as the Non Proliferation Treaty [NPT], the Tlaltelolco Treaty, the Argentine-Brazilian nuclear agreement and the Argentine policy on nuclear exports, were addressed in depth. The various aspects of the policy on disarmament and international security will be analyzed, especially Argentina's participation in the peace and disarmament initiative of six nations (Group of Six). The meeting began yesterday and will end tomorrow. [Excerpt] [Buenos Aires DYN in Spanish 0326 GMT 31 Jul 87 PY] /9738

CSO: 5100/2130

NUCLEAR POWER PLANT ANGRA I BREAKS DOWN

Idle for 6 Months

PY070328 Rio de Janeiro Rede Globo Television in Portuguese 2255 GMT 6 Aug 87

[Experts] Experts from Furnas Centrais Electrics have concluded that the probl affecting the Angra I Nuclear Power Plant in Rio de Janeiro was caused by a problem its manufacturing. Angra I will be idle for at least 6 months due to a problem in tl electricity generator. The losses are estimated to reach 1.2 billion cruzados.

Angra I was inaugurated in 1974, 6 years behind schedule, at a cost of $2 billion. Al the equipment for the power plant was supplied by the U.S. company Westinghouse. Tl Brazilian enterprise Furnas Centrais Eletricas has discovered several mistakes in tl design provided by the U.S. company. Angra I has been closed and reopened 23 time already. It was presently generating an average of 570 megawatts, that is 570,0(kilowatts per hour. The power plant has been closed since 24 June because of a proble in the electricity generator.

Rex Nazareth, president of the National Commission for Nuclear Energy today demanded a inquiry on the problems that caused the closing of Angra I.

[Begin recording] [Nazareth] We cannot depend on foreign companies for our energ supply when this country has everything it needs for an autonomous nuclear energ program. We would then avoid problems like this one.

[Reporter] What do you think should be done in this case?

[Nazareth] We should hold the manufacturers responsible. In my opinion, something lik this should never happen again in the nuclear energy field in Brazil. [end recording]

Westinghouse is the U.S. company that supplied the equipment for Angra I. Westinghous has yet to answer charges made against the company in a federal court in New York Judge Whitnam Knap has given Westinghouse until 21 September to answer the Brazili charges that it sold Brazil faulty parts. According to a U.S. attorney specialized commercial law, the trial may last 3 years.

Westinghouse Blamed for Failure

PY0092314 Rio de Janeiro O GLOBO in Portuguese 7 Aug 87 p 18

[Text] Joao Camilo Penna, president of Furnas Centrais Eletricas, said Westinghou the U.S. firm that built the nuclear power plant Angra I, will neither repair t electric generator built with faulty parts, nor be asked again to render services any kind to the nuclear plant.

Furnas also decided yesterday to withdraw Westinghouse's name from its list suppliers. This was done to demonstrate that the possibility of reaching understanding with the firm no longer exists. Camilo Penna stressed that Westinghou will no longer service Furnas' equipment.

Camilo Penna has also confirmed that Furnas is considering bids from Brown Boveri, As and Siemens -- firms currently represented in Brazil in association with loc industries -- to repair the electric generator in about 6 months. The generator sho circuited in June. After examining the situation, Furnas' technicians ascertained th the problem was caused by defective parts. Camilo Penna said Furnas continues t discuss the possibility of filing a new lawsuit against Westinghouse in U.S. courts d to the problems in the Angra I electric generator.

Camilo Penna added that Westinghouse will not be invited to bid on the repair of th generator because, besides the litigation over the faulty manufacturing of othe components, Westinghouse has been blamed for the breakdown of an Angra I generator This breakdown is, "without a shadow of a doubt," Westinghouse's fault. Westinghous told Furnas they were interested in repairing the generator.

Last month, Furnas filed a lawsuit in New York against Westinghouse because desig errors were found in a steam generator supplied by the firm. These errors will reduc the guaranteed life of the generator.

The country will have to spend $2.3 billion to finish the construction of the Angra I and Angra III Nuclear Power Plants. A total of $1.7 billion has already been spent o both power plants (construction of Angra III has not started yet). The total cost o the three power plants will then reach $9 billion. According to recent statements b Licinio Seabra, president of Nuclebras [Brazilian Nuclear Corporation, Inc] the countr will build two nuclear plants for the price of three, because the average cost of single nuclear plant is $3 billion.

/6091
CSO: 5100/2131

LACK OF PAYMENTS DELAYS CONSTRUCTION OF ANGRA II

PY221711 Rio de Janeiro O GLOBO in Portuguese 21 Jul 87 p 24

[Text] Nuclebras President Licinio Seabra yesterday reported that CONFAB [Natior Brazilian Steel Forging Company] has suspended assembling the containment chamber the Angra II nuclear reactor, and 2 weeks ago withdrew some 100 employees from t construction site due to payment delays by Nuclebras. Seabra explained th Nucleabras' overall debt to contractors and suppliers amounts to approximately 4 million cruzados. Nuclebras directors are trying to negotiate the resumption construction with CONFAB.

According to Seabra, if Nuclebras' budget, which has already suffered many cuts, reduced even more by new budget cuts in state enterprises, the construction of Angra "could be paralyzed completely." The plant's completion date has been delayed again another year. It will now be ready in 1993. Seabra is mainly worried about the hi financial costs, which amount to more than $1 million daily.

Last week, Seabra explained to representatives of the Special Secretariat for Stat Enterprises (SEST) [Secretariat Especial das Empresas Estatais] that Nuclebras situation is very precarious. He also explained the effects of new delays on th construction of Angra II. The country will spend some $9 billion with the constructic of Angra II and Angra III; that is, it will build two nuclear plants for the price c three, according to Seabra.

The other problem worrying Nucleabra is the departure of qualified personnel due to th low salaries they receive and the lack of motivation. Part of the engineering projec that had been done by Brazilians is now being done by Germans. "It's going to tak magic" to reduce the number of employees without firing them, Seabra stated Notwithstanding the budget cuts, Nuclebras' deficit amounts to 5 billion cruzados.

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CSO: 5100/2127

CONSTRUCTION COSTS OF ANGRA II, III TO TOTAL $8 BILLION

Rio de Janeiro O GLOBO in Portuguese 4 Jul 87 p 22

[Text] The Angra-II and III nuclear plants will cost the country $8 billion, $4.5 billion of which pertain to the payment of interest on the loans obtained for their construction. That revelation was made yesterday by NUCLEBRAS President Licinio Seabra after delivering a talk at the Naval War School. According to Seabra, that means that the amount to be paid in interest alone is greater than the actual direct costs of both power plants combined: $3.5 billion.

The executive said that he was concerned about the burden of the interest, which tends to increase more and more, aggravated by the delays of the projects.

"To build the two plants, we are going to spend enough funds to have built three nuclear plants. The average cost of building a nuclear plant in an average period of 7 years is in the order of $2 billion plus $1 billion of financial expenses.

In the event that Angra-II is completed in 1993--more than a year behind the government's last prediction--it will have taken 17 years to build at a final cost of $4 billion. The Angra-II project is progressing at the slowest level possible to preserve the technology already absorbed and retain the technicians. The Angra-III plant, scheduled to go into operation beginning in 1995 has not even been begun, while most of the equipment of the two plants is stored in Brazil and Germany.

In his talk to the officers, Licinio Seabra stressed the strategic importance of the development of the nuclear program aimed at providing the country with the technological know-how for the use of that energy by 2010-2015, when it will become necessary, according to the president. NUCLEBRAS' foreign debt is $2.5 billion, and the German banks that already loaned $2.5 billion for the program suspended their financing in 1984 because they demanded that the Brazilian Government also participate with its own counterpart funds.

The German partners of the Kraftwerk Union Company (KWU), who participated in the nuclear program in the construction of power plants and in the transfer of technology, are "very concerned and somewhat disillusioned," admitted the president of NUCLEBRAS.

"They understand that the lack of funds for the program is due to the country's economic difficulties and not a deliberate action against nuclear energy," he explained. "It is important to the KWU that the undertakings be completed for their own image on the world market, because there are always doubts abroad about whether or not it is the Germans' fault," he declared.

To execute the minimum program of projects this year, NUCLEBRAS is going to need a supplement of at least 5 billion cruzados, said Licinio Seabra, who still does not know where it will come from. The company's overall budget is 19.5 billion cruzados, of which 10.9 billion is for investment, 4.2 billion for costs, and 4.3 billion [figures as published] for payment of the service on the debt.

8711
CSO: 5100/2117

2010 ENERGY PLAN FORECASTS NEED FOR FOUR MORE NUCLEAR PLANTS

Rio de Janeiro O GLOBO in Portuguese 29 Jun 87 p 14

[Article by Ramona Ordonez]

[Text] Do not be frightened but by the year 2010--in only 23 years--the country will need to have four more nuclear plants in operation, in addition to Angra-I, II, and III, to satisfy the electric energy consumption of more than 200 million inhabitants. At least, that is one of the conclusions reached by the ELETROBRAS experts who are preparing National Electric Energy Plan 1987-2010, or simply Plan 2010, which plans the short, medium, and long-term evolution of the electric energy sector and presents the options to meet it.

Two important aspects must be pointed out, however: for the first time, the preparation of the country's electric energy market plan has the broad participation of all the segments of society involved in the sector in one way or another, with the holding of seminars and the participation of the public and consumers. Another aspect is that, also for the first time, the question of the environment, always relegated to a secondary plane, will be given as much importance as the execution of the projects.

The plan will be completed in October and its preliminary version is being discussed at the present time among the experts of the electric energy companies, various public agencies, sector organizations, and universities and, consequently, is subject to change. Jose Luis Alqueres, the assistant to ELETROBRAS' Planning Directorate and one of those responsible for preparing the plan, explained to GLOBO that the study indicates only that by the year 2010 we will need 14,000 megawatts (MW) of energy generated by thermal plants, of which 6,000 MW generated by coal-powered plants and the remainder by nuclear plants. The executive stressed that the choice of the thermal plant type, whether coal or nuclear, is a political option that still has to be taken

On the 7th of next month, Mines and Energy Minister Aureliano Chaves will meet in Rio with representatives of ELETROBRAS to evaluate and formulate guidelines about Plan 2010. Among the various questions that will be discussed are the alternative sources of energy proposed (coal-powered and nuclear). Luis Alqueres declared that the nuclear plants can even be taken out or left in the plan.

"The electric sector only indicates how much energy it is going to need," he explained, "which can be supplied in one form or another. In the next 5 years, the country will have to decide whether it will opt for nuclear power plants or whether it will develop the technology and face the environmental problems to use the hydroelectric potential of Amazonia."

Based on the estimate of the country's economic growth and the demand for energy, the plan foresees the need to build 100 new plants by the year 2000, of which 85 would be hydroelectric and 15 thermal (4 nuclear).

According to Luis Alqueres, one important fact is that the plan is not being prepared behind closed doors by ELETROBRAS experts to be announced later, but with the involvement and suggestions of various segments of society. For the first time, its preparation has the participation--in addition to ELETROBRAS--of representatives of all electric energy companies, experts from various ministries and, principally, from sector organizations, industrial associations, universities and equipment manufacturers. Before it is completed, the plan will be discussed during the Energy Congress that will be held in August and, according to the ELETROBRAS executive, all can express their criticism and suggestions.

The studies indicate that in the first decade of the next century, the hydroelectric potential, principally in the Northeast, South, and Southeast regions, will be practically exhausted, with only the great potentials in Amazonia remaining. Hydroelectric power, which represents 91 percent of the total generated today, will decrease to 88 percent by the year 2010, while coal, which represents 2.8 percent today, will increase to 4 percent, and nuclear energy will go from 2.8 percent (Angra-I and II) to 5 percent.

The country's current installed capacity of 51,000 MW will increase to 74,400 MW in 1995; 96,200 MW in the year 2000: 125,300 MW in 2005; and 154,300 MW in 2010. That generating capacity was calculated on the basis of conservative growth rates for the country, according to Luis Alqueres. The GNP should increase 6.8 percent per year in the period 1985-1990 and then fall until it reaches 4.7 percent in the period 2005-2010. In that scenario, electric energy consumption will increase annually 7.8 percent in the period 1985-1990, dropping to 6.2 percent in 1990-1995, until reaching 4.3 percent per year in the period 2005-2010.

Those growth rates take into account an intense program of energy conservation that will start with substantial savings of 4,484 gigawatt/hours per year in 1990 up to 88,114 gigawatt/hours in 2010. To achieve those savings, ELETROBRAS will proceed with the Energy Conservation Program (Procel) to increase the efficiency of home electric appliances; and eliminate waste by more rational use, also relying on real-price rates, which will encourage the reduction of consumption.

Because of the difficulties of planning long-term expenditures, the plan provides for investment until 1995. In the period 1987-1995, the electric needs to invest $61.5 billion to meet the anticipated demand. From 1987 to 1990, $6 billion per year will be invested; and in the subsequent years until 1995, $7.5 billion per year.

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CSO: 5100/2117

ERMIRIO DE MORAES DEFENDS UNRESTRICTED PLANT CONSTRUCTION

Brasilia CORREIO BRAZILIENSE in Portuguese 4 Jul 87 p 8

/Article by Eugenio Novaes/

/Text/ Businessman Antonio Ermirio de Moraes proposed yesterday /3 July 1987/ that the generating of energy by hydroelectric plants be opened to private enterprise, and that the Constituent Assembly not take steps to prohibit the installation of nuclear reactors in Brazil, because, within 30 years, with a growth rate of 5 percent per year, the country's hydroelectric reserves will be nearly exhausted.

The superintendent of the Votorantim Group stated that the development of this sector should certainly be in the hands of Brazilian scientists so that the nation will in fact have all the technology of that process and will not need to buy new "black boxes" in the future.

The businessman defends greater incentives for research in this and other sectors, recalling the fact that this is the only way for the country to emerge from its underdevelopment. He points out that other countries and the big multinationals, trying to prevent such development, do not pass technology along to potential competitors.

When the country needed to produce uranium hexafluoride, for example, the multinational companies Bayer and Dupont refused to collaborate in the production of elementary fluorine, because it is also used in manufacturing teflon, a product that Brazil spends $1 million per year to import. Teflon is indispensable for non-corrosive coatings, precision valves, and insulation.

"When we were asked to produce hydrofluoric acid without humidity, which is absolutely necessary for making uranium hexafluoride, a great effort was not needed to produce it in a short time. Now, if we succeed in producing uranium hexafluoride, teflon is not one of the most difficult things to produce. It is a program that is relatively easy to carry out. It is

evident that, at the same time, we have to increase the production of hydrofluoric acid in some state other than Sao Paulo, but close to the raw material, which would be more economical."

For Antonio Ermirio, regulation of the country's nuclear activities should be achieved through a supplementary law and not through the Constitution, since scientific and technological advances in this sector are very rapid, which could lead the future Constitution to become quickly outdated.

"We should not forbid the installation of reactors because, after all, that would be to ignore what may happen in Brazil after the year 2015. At a growth rate of 5 percent per year, our hydroelectric reserves might possibly support that growth until 2015. We therefore have 30 more years in which to develop our own nuclear technology. The program underway in Brazil now is a slow research program, like the one being developed in Pocos de Caldas, where we are already making 'yellow cake' with subsequent fluoridation. Then comes concentration, which is more difficult, because Brazil uses the centrifugal jet. We may have to opt for other methods, simpler perhaps, not as complicated and better known, for the transformation of uranium into uranium oxide," Antonio Ermirio stated.

"Believing in our scientists, we will be able to develop the uranium cycle in Brazil without having to rely greatly on imported technology," says Antonio Ermirio, for whom this would mean producing nuclear kilowatts in a more economical way. The accidents at Chernobyl and Three Mile Island also served to show that shutting down a nuclear plant costs one-third of what it cost to build it. "In spite of that, 24 percent of Argentina's energy is nuclear; in France, more than 60 percent, almost two-thirds, is nuclear in origin; in Belgium, more than 50 percent. These are countries that obviously already depend on nuclear energy because they have no other form of fuel. We have the hydroelectric part. That is why I think we should get in contact with nuclear energy, get accustomed to nuclear energy more slowly, little by little. But it is necessary to see that it is absolutely indispensable. I am certain of that."

9895
CSO: 5100/2126

MILITARY PARALLEL NUCLEAR PROGRAM TO CONTINUE

PY110332 Sao Paulo O ESTADO DE SAO PAULO in Portuguese 9 Aug 87 p 40

[Article by Roberto Godoy]

[Excerpt] The outage of the Angra nuclear plant and/or the suspension of the Brazili atomic project will not affect or interrupt the parallel program being carried out the Aeronautics, Navy, and Army Ministries with the objective of giving Brazil comple domination of nuclear technology and its related aspects, both civilian and military.

This secret undertaking is being carried out by Armed Forces research agencies and h at least two very well defined targets: The technology of fast reactors of the Fa Breeder [preceeding two words in English] type, and the building of a medium-siz submarine. The work on the first target is currently being concentrated at t Advanced Studies Institute of the Aerospace Technological Center located in Sao Jo dos Campos.

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CSO: 5100/2131

BRIEFS

NUCLEBRAS DEBTS--According to the president of NUCLEBRAS, Licinio Seabra, that state enterprise's debt to national contractors and suppliers of machines and equipment already totals 300 million cruzados. Added to this figure is another 200 million cruzados owed in foreign currency to foreign firms. He said that the debt would be greater were it not for the fact that the company's projects--the Angra-II nuclear plant and fuel-cycle projects--are in a slow-down mode. To minimize its financial problems, which could even cause delays in the payment of salaries, NUCLEBRAS is counting on receiving this month part of the 3 billion cruzados it will get from the National Treasury. According to Seabra, release of that sum, if approved by the National Congress, should occur this second quarter. Nevertheless, that amount is not enough for the company to fulfill its program of projects in 1987. "We shall have to request a supplement of about 8 billion cruzados, otherwise, it will be difficult to keep NUCLEBRAS operational," he commented. While it is awaiting new definitions, the state enterprise is already setting up its sector recovery program, on theexample of what was done for the electric sector. It will be a program integrated with the hydroelectric projects. [Text] [Sao Paulo GAZETA MERCANTIL in Portuguese 5 Jun 87 p 15] 8711

PIRES SCORES ARMS LIMITATION--Queried yesterday about the inclusion of legal provisions in the country's new constitution, prohibiting the manufacture and transportation of arms, especially nuclear arms, Army Minister Leonidas Pires Goncalves stressed that "there is no constitution in the world except that of the Federal Republic of Germany, for powt-war circumstantial reasons, that governs this subject. He added: "No state limits itself technologically because by adopting that position it would absurdly be opting for a limitation of its greatness and sovereignty." Questioned by CORREIO regarding to what extent the economic crisis that the country is experiencing is hurting the reequipping of the Ground Force, Leonidas Pires, who is currently implementing the Ground Force-1990 (FT-90) plan, explained: "The funds allocated to the Ministry of the Army in the federal budget have decreased from 8.5 percent in 1971 to 2.3 percent in 1985. In relation to the Gross National Product (GNP), that ratio dropped from 1.24 percent in 1970 to 0.1 percent in 1984. For a long time, only 8 percent of the Army's funds were applied to investments which, as a consequence, greatly influenced the reequipping of the Ground Force. At the beginning of the current administration, in view of the situation described, the minimum funds necessary were granted for the Army to achieve an operational level compatible with national requirements. As is

natural," added the minister, "the adjustments stemming from the country's current economic situation, necessitated readjustments of the priorities of the Army, like the other sectors." Despite the expenditure containment measures adopted by the Sarney government, the Ministry of Finance has just approved the allocation 32 billion cruzados to the Armed Forces, as surplus from Income Tax collections (base year 1986), with the Army getting about 10 billion cruzados. Aeronautics was the branch that received the largest share. [Text] [Brasilia CORREIO BRAZILIENSE in Portuguese 26 Jun 87 p 5] 8711

FURNAS SEEKS PROGRAM DEFINITION--Yesterday /12 July 1987/, Joao Camilo Penna, the president of Furnas Electric Power Station, pointed to the need for a rapid definition of Brazil's nuclear energy program. According to him, lack of definition puts the electrical energy supply in the Southeast at risk in the coming years, once there are no resources to continue the program or it is no longer defined by the construction of new hydroelectric plants. The president of Furnas furthermore called attention to two serious problems in case the government decides to interrupt the nuclear program. The first is a question of cost, since finishing the two plants will require $2.2 billion more, adding, however, 2.4 million more kilowatts of energy to the southeastern system. Currently, the two plants, without generating anything, have already consumed $7 billion, including simulators of energy generation "bought for millions of dollars" to train personnel to operate the plants, and which are now being used just to train personnel from other countries, including Germany. The second problem would be the "serious financial difficulties that cancelling the nuclear program would bring for some private enterprise firms." Camilo Penna said that at least two Sao Paulo companies that he preferred not to identify have made heavy investments in equipment and raw materials to answer the government's appeal to maximize domestic control of the plants. If the program is cancelled, "those companies are going to be in serious trouble." /Text/ /Rio de Janeiro O GLOBO in Portuguese 13 Jul 87 p 13/ 9895

CSO: 5100/2126

INDO-SOVIET TALKS ON NUCLEAR COOPERATION EXAMINED

Bombay THE TIMES OF INDIA in English 15 Jul 87 p 15

[Article by S. Kumar]

[Text] INDIA calls it "the Soviet offer". The Soviet Union terms it "the Indian request". This sums up the current Indo-Soviet talks on nuclear co-operation which envisages the installation of Soviet nuclear power reactors for the Indian nuclear power programme.

The proposal is yet to take shape and the studied silence of Indian spokespersons has only led to misleading conclusions. The close friendship with the Soviet Union has naturally encouraged the inference that the Soviet reactors will be bought by India. This is not the reality.

India has so far not given any firm commitment to the Soviet Union on the purchase of the power reactors, though nothing prevents India from receiving the Soviet teams which make regular visits to India to discuss the issue.

The subject was first broached by the Soviet Union with the former prime minister, Mr Morarji Desai, during his visit there in 1979. It was only too well known that Mr Desai neither wanted a nuclear bomb nor nuclear power. In fact, he wanted to cut the department of atomic energy down to size. The ensuing political uncertainties pushed the issue to the background and the Soviets did not know to whom to talk.

MUTUAL VISITS

They waited till Mrs Gandhi came back to power and in 1982, resumed the subject by despatching a technical team to India. In 1983, they came again and an Indian team paid a visit to the Soviet Union. These mutual visits took place once again in 1984. In the subsequent three years, the Soviet team made annual sojourns to India but no Indian team reciprocated. It is very likely that before the end of this year, an Indian team will visit the Soviet Union.

At the end of every meeting, both teams recorded the observations made by members. Indian officials describe it as "minutes of the meeting" while the Soviets prefer to call it "protocol". In none of the meetings so far has any specific detail been agreed upon.

All that is known is that the Soviet deal includes a financial package which is normally offered in any other international trade deal by the Soviet Union. It means repaying the loan in 20 years, with a moratorium for the first three years and the rate of interest of about two and a half per cent. In the absence of any other commercial information, such dialogues cannot be meaningful.

A basic question any buyer would ask is the cost of the product. The Soviets cannot discuss this because cost is immaterial in their system, while it is the starting-point for us. To examine whether the purchase of Soviet reactors is economical, we need to know the price structure. Without this, nothing can be said in favour of or against the proposal.

Secondly, will the Soviet Union build the power stations on a turnkey basis? Will it export the reactors, its components and control systems so that we can carry out the construction? Will it give some critical components and leave others for the indigenous industry to make?

Anything is possible, the Soviets say, but let us first sign an agreement. So the issue has reached an impasse — to sign first and talk or talk first and sign later. The Indian team has no brief to sign on the dotted line.

Turning to the technical discussions, Indian engineers have sought details. In the latest meeting, some information has been given. Still more information is needed and has been called for. Before agreeing on the pressurised water reactor (PWR) technology, the Indian Atomic Energy Regulatory Board has to satisfy itself about the safety aspects, and the reactor engineers must learn themselves about the design aspects. These necessitate elaborate scrutiny and, only after recommendations, from these quarters, will any agreement be in sight. As an outcome of the latest Soviet initiative, the technical exchange of information will be pursued.

It is an open secret that those familiar with the three-decades-old story of India's nuclear energy programme see the introduction of Soviet reactors as myopic. The status of nuclear power in India eight years ago was quite different from what it is today. A lot of uncertainties plagued our programme then.

INDIAN PROGRESS

Our nuclear industry is in a very strong position today. The production of heavy water has been stabilised. The industry has masterd the fabrication of nuclear equipment. A steam generator rolls out of BHEL every three months, which was a doubtful proposition some years ago. The reactor component, calendria, which used to take four years is now made in less than two. Similarly, end shields now take two years, instead of four. For the Kakrapar atomic power project, all critical components have reached the site. Indian industry is now looking for a challenge. What is needed is proper management input to enable the installation of several reactors at the same time, unlike in the past where each project was executed in full before taking up another.

The other familiar line of objection to the Soviet deal is technology. Indian engineers have yet to grasp the PWR technology offered by the Soviets where enriched uranium and light water are used, as opposed to the natural uranium and heavy water used in the Indian pressurised heavy water reactors (PHWRs).

Perhaps the only factor which may persuade India to look into the Soviet offer is purely financial. It has been repeatedly pointed out by various expert groups on energy that there is a perennial shortage of power in the country and this is directly attributed to the limited resources available for investment. In spite of the financial constraints, the government gave more to the power sector, and atomic energy in particular got its fair share. The government has been made to stretch its resources to the limit and there seems to be no other way to raise more finance for the nuclear industry. What ails the Indian nuclear industry now is precisely the lack of money.

PRASAD COMMITTEE

A committee set up in 1979 under Dr N. B. Prasad to formulate an energy policy had projected that by the year 2,000, India would require 120,000 MW of total power. For obvious reasons, the committee ruled out oil, good quality coal and gas for power generation as these products were to be used elsewhere for better returns instead of being wasted on generating power. This leaves bad quality coal, hydro and nuclear energy as available options.

The Prasad committee suggested that India should achieve at least 25 per cent or 30,000 MW of nuclear energy by the turn of the century. In the 1980s, the department of atomic emergy pointed out that it can add a maximum of 10,000 MW only to the energy scene by 2,000 A.D. and that is the goal set for the department, now. Even this goal can be achieved only if sufficient funds are available. The Soviet offer has to be examined from this point of view also.

Another point worth mentioning is that the Russian PWRs do not generate much plutonium whereas the Indian PHWRs are known to be one of the best producers of plutonium, which is required for the next phase of power reactors.

Finally, the international fall out of an Indo-Soviet nuclear deal is far from clear. It appears no one has bothered to even mention it. The issue of sticky international safeguards and the supply of enriched uranium from a foreign source are troublesome matters that remain to be resolved before carting the Soviet reactors away to India. No one, including the Soviets, has any inkling on the number of reactors India may buy, the likely date of the first shipment, and other details.

/13104
CSO: 5150/0175

DEFENSE EXPERT SAYS BOMB REQUIRED AGAINST PRC

Calcutta THE TELEGRAPH in English 15 Jul 87 p 5

[Text] New Delhi, July 14 (UNI): India needs to go nuclear to counter the Chinese threat and reduce the country's defence expenditure, according to an eminent defence expert.

Reacting to reports of Chinese deployment of 90 nuclear missiles aimed at India, Mr K. Subranyam, director of the Institute for Defence Studies and Analyses here, told UNI that "the only way to combat the Chinese nuclear threat is to go nuclear."

Mr Subramanyam said the very possession of nuclear weapons by a country was not only psychological warfare but also "real" warfare. "Somehow people think that firing nuclear missiles is the threat," Mr Subramanyam said but "in fact, the threat of use is the use."

Mr Subramanyam, however, said yesterday's report saying that China had deployed 70 medium-range missiles and 20 short-range missiles just outside Lhasa, was "not new."

He said China had nuclear missiles in Tibet from the early Seventies and the Indian government's attitude has been that of "living with it."

Asked if the so-called Chinese "nuclear card" could shatter the morale of the Indian Army, Mr Subranyam said, "It has already shattered the morale of our editors, media people, bureaucrats and political leaders."

Mr Subramanyam asserted that it was "idiotic" to think that by exercising the nuclear option, India will be "eating into" its developmental funds. He said by accepting this argument, India was doing what the superpowers were asking from the non-nuclear powers.

The defence expert said the cost of one nuclear bomb would be less than the cost of one tank. "The 1974 Pokharan explosion, according to the government, cost about Rs 32 lakhs. Taking inflation into account, the cost of one nuclear bomb should range between Rs 1 crore and Rs 2 crores.

"But the psychological advantage of a nuclear bomb clearly outweighs the real advantage of a tank—a nuclear bomb is the ultimate arbiter." He said the nuclear option can reduce our defence expenditure and added that—China had done it effectively.

"Over the past three years, China has reduced the strength of its armed forces from four million to three million. They have also reduced their defence budget as they know with nuclear weapons in their hands nobody will invade their territory."

Mr Subramanyam said India also could do the same and divert the money saved from defence expenditure to developmental activities.

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CSO: 5150/0176

EXPORT OF REACTORS, HEAVY WATER TECHNOLOGY POSSIBLE

BK201156 Hong Kong AFP in English 1038 GMT 20 Aug 87

[Text] New Delhi, Aug 20 (AFP) — India would start exporting nuclear reactors and heavy-water technology in a few years, the chief of the country's main nuclear research centre was quoted as saying here Thursday. India had already received requests for reactors and heavy-water technology from some countries, the *Press Trust of India* (PTI) reported, quoting P.K. Iyengar, director of the Bhaba Atomic Research Centre in Bombay. Dr. Iyengar did not say which countries had made the requests but said the 235-megawatt nuclear reactor developed by Indian scientists would be best suited to the needs of developing nations.

India, which exploded a "pacific" nuclear device in 1974, has one of the most advanced nuclear-power programs in the developing world. The avowedly peaceful program is targetted at producing 10 percent of all power generated in India by the turn of the century.

Dr Iyengar told a group of science writers that the research centre had the capability to make a nuclear bomb, but denied reports that a rare earths plant set up near Mysore, southern India, was a "bomb factory," PTI said.

India's five nuclear reactors and one research reactor were safe, and the Dhruva research reactor at Trombay, near Bombay, was so safe that a radiation release would not go beyond surrounding hills even if it was bombed, he said. Dr Iyengar said Indian scientists were working on developing special cannisters to store radioactive wastes for up to 30 years.

/8309
CSO: 5100/4757

PAPER CASTS SUSPICION ON PAKISTAN ENRICHMENT PLANT

Bombay THE TIMES OF INDIA in English 11 Jul 87 p 7

[Text] THE second uranium enrichment plant being set up by Pakistan has been located deep inside the territory unlike the plant at Kahuta which is thought to be vulnerable to an air attack.

The enrichment facility has no linkage with the nuclear power programme which does not require additional enrichment capacity and the enrichment level being planned in the new facility.

According to reliable information, work on the project has already begun with a West German firm providing technical assistance in the form of blueprints and some very sensitive equipment.

Now it has been established that these supplies were sent via France and Switzerland with a view to avoiding detection. Some of the equipment and blueprints were seized by the Swiss authorities who intercepted a consignment as it was being sent to Pakistan.

It turned out later that the blueprints were alleged to have been stolen from a subsidiary of the West German firm. This indicates that the determination of the Pakistan government to build the second uranium enrichment plant even if it means having to steal for beating an export embargo as was done in the case of the first enrichment plant.

The Swiss authorities were satisfied that components destined for Pakistan were indeed designed to enrich uranium well above the three per cent level agreed to by Gen. Zia of Pakistan in a letter to the U.S. President, Mr Ronald Reagan.

A detailed account of this subterfuge reported in a specialised journal said the affair came to light following a search by West German customs officials of the Cologne firm which reportedly masterminded the attempts to export the components to Pakistan last year.

The issue has also been raised by the U.S. Senator, Mr John Glenn, who wondered whether the Reagan administration had deliberately withheld from the House and Senate committee information on West German and Swiss investigations about Pakistan's efforts to secure prohibited equipment.

/13104
CSO: 5150/0174

PAKISTANI NUCLEAR INSPECTION OFFER TERMED 'PROPAGANDA'

BK211313 Delhi THE HINDUSTAN TIMES in English 10 Jul 87 p 9

[Editorial: "Junejo's Offer"]

[Text] There is nothing new in the Pakistani Prime Minister's offer of an agreement with India for mutual inspection of each other's nuclear facilities. Mr Junejo told Japan's *Kyodo News Service* that Pakistan would allow India to inspect the controversial Kahuta uranium enrichment plant near Rawalpindi in exchange for a similar inspection of Indian nuclear installations. Mr Junejo must have known that India has rejected similar suggestions in the past and would do so again. He made the offer simply for gaining a propaganda advantage during his forthcoming visit to Japan where non-proliferation remains a live issue in public mind.

For years Pakistan has been moving a resolution in the UN General Assembly wanting to declare South Asia a nuclear weapons-free zone. India has opposed the resolution on the ground that it would deprive India of its right to exercise its nuclear option despite the fact that China has already stockpiled nuclear weapons. Two years ago, Pakistan suggested a four-point plan envisaging India to: adhere to the Non-Proliferation Treaty [NPT] accept full-scope safeguards of the International Atomic Energy Association; subscribe to the concept of a nuclear weapons-free zone in South Asia; and enter into a bilateral treaty with Pakistan renouncing nuclear weapons. Similar suggestions have been sent to India by the United States which specially sent one of its senior State Department officials, Mr Michael Armacost, in an attempt to convince New Delhi that an agreement with Pakistan on the question is in the best interest of India, Pakistan and the region.

India has rightly opposed such moves simply because these are essentially meant to push the NPT through the back door. India has always resisted the pleas for signing the NPT on the plea that it discriminates between the nuclear 'haves' and the 'have-nots' by letting the nuclear weapons states to retain or expand their nuclear arsenals denying to others, at the same time, the right to go in for nuclear weapons. Even if India does not have the bomb and perhaps does not want to have one, it has the option to go nuclear. The suggestion made by Pakistan's Prime Minister seeks to deny India the right to retain this option. This India cannot afford to give up particularly because Pakistan's nuclear programme and intentions are suspect. No Indian government can after all ignore Western reports as well as the implications of the interview given by Dr Abdul Qadeer Khan to Mr Kuldip Nayar which say a lot about Pakistan's nuclear programme.

/6091
CSO: 5150/0178

PAPER INTERVIEWS ATOMIC ENERGY COMMISSION HEAD

Calcutta THE STATESMAN in English 16 Jul 87 p 4

[Article by V.S. Maniam]

[Text] According to the chairman of the Atomic Energy Commission, Mr. M.R. Srinivasan, the matter of import of two 440 MW nuclear power plants from the Soviet Union is still under discussion. And contrary to some reports, "the time for a decision has not really come yet".

In an exclusive interview, he told this reporter: "The question of accepting the Soviet offer will come only after a complete understanding of their terms and conditions. The discussions have gone up only to some extent. They have not yet reached the stage of taking a decision."

Those discussions have been going on since 1983. "Every year there have been discussions at one place or another". The latest round of discussion a few days ago was in continuation of the previous rounds. "We discussed some issues related to such a possibility (of import or reactor) in a fairly comprehensive manner". But the Government had yet to evaluate the outcome of those discussions. "And we have yet to put together all the information for taking a final decision".

Mr Srinivasan emphasized also that any import of reactors for power generation from abroad would not be at the cost of this country's traditional nuclear policy. "Certainly the country is not going to give up its basic policy on the Non-proliferation Treaty or its determination not to accept full-scope safeguards. These are primary principles which will not be given up".

Also, any such import would not be allowed to impede the country's self-reliant development in the nuclear field. "The commitment to self-reliance is something that I have myself practised throughout my professional career in this department".

The problem, however, was that the country needed a rapid increase in the installed capacity for power generation. And it was in that context that "the possibility of adding to existing nuclear electricity capacity with reactors imported from elsewhere had been under consideration.

According to one report, Mr Srinivasan, unlike his predecessors, was in favour of the Soviet proposal for sale of reactors to India. He laughed that away with the comment, "This is how newspapers dramatize things". Then he added: "There is no personal viewpoint in these matters. These are discussed in the background of Government policies. And the decisions taken are collective decisions, and not based on individuals' whims and fancies".

Mr Srinivasan emphasized also that the Tarapur experience where supply of enriched uranium fuel and spare parts was stopped by the original supplier at one stage would be kept in mind when finalizing the deal for reactors from abroad. "We are aware of all these experiences. Do you think we want to get into that kind of situation again? Certainly not".

The AEC Chairman repeated that nuclear reactor sales are not like other commercial transactions. "These do involve questions other than commercial terms. Political questions are involved: questions like fuel supply on a long-term basis. These are complex questions. They have to be considered carefully before any decision is taken. The Government is fully aware of the different implications. And when a decision is taken, all these will be very carefully weighed."

This reporter mentioned that the public apprehension over the import of reactors arose from a very genuine fear that India should not again have the painful experience that it has had since 1974 from foreign suppliers of nuclear material. Mr. Srinivasan answered: "We know the situation very well. We have gone through this kind of thing before. And we will take all relevant issues into account. But as I said, the time for decison has not come. We have not reached that stage at all".

/13104
CSO: 5150/0177

BRIEFS

TARAPUR POWER UNIT SETS RECORD--Unit II of the Tarapur atomic power station has set a new record for uninterrupted operation. It has been continuously functioning for 200 days. The earlier record for continuous operation was 189 days in 1985-86. An official press release issued in Bombay says the unit generated about 750 million units of power with 98 percent capacity utilization. [Text] [Delhi Domestic Service in English 0435 GMT 31 Jul 87] /8309

RAPP UNIT RECOMMISSIONED--The first unit of the Rajasthan Atomic Power Project (RAPP), near Kota, out of order for five years, was re-commissioned on an experimental basis on Saturday at 12-35 p.m. A broken end-shield of the reactor was detected in 1982 and in 1986 engineers conceded that they were unable to repair it. It was feared that the plant would be closed. According to an RAPP source, in the next two or three days about 30 MW power will be generated after which the unit will be closed for four or five days. When the unit starts working again, the source said, efforts would be made to generate 100 MW. The RAPP second unit is now producing 50 lakh units of power daily which is slightly below the normal level of the unit. [Text] [Madras THE HINDU in English 13 Jul 87 p 1] /13104

PROTEST IN GUJARAT--In Gujarat, police fired to disperse unruly crowds indulging in stone throwing near the Kakrapar Atomic Power Plant under construction yesterday. No one was injured in the firing, but six policemen sustained injuries in stone throwing. The violence occurred during the course of a meeting organized by the anti-Kakrapar Atomic Power Plant Committee to observe Hiroshima Day. [Text] [BK070507 Delhi Domestic Service in English 0435 GMT 7 Aug 87] /13104

GANDHI AFFIRMS PAKISTAN'S NUCLEAR FACILITIES--The prime minister has said that the massive arms aid being given to Pakistan is meant to shift India's attention from its anti-poverty programs. Mr Rajiv Gandhi was addressing today a gathering of Congress-I workers from Rajasthan, Uttar Pradesh, and Delhi. He said the aim is to push India into the arms race and divert its limited resources from development programs to arms. He said it is strange that the United States is ready to change its laws to help Pakistan knowing fully well that Islamabad is making feverish attempts to manufacture the atomic bomb. He said Pakistan has nuclear facilities at five or six places. The U.S. should insist on inspection of all these units instead of the unit at Kahuta only. [Text] [Delhi Domestic Service in English 1530 GMT 25 Jul 87 BK] /9274

PAKISTANI NUCLEAR INSPECTIONS SUGGESTION REJECTED--India today rejected a suggestions by the Pakistan prime minister for mutual inspection of nuclear plants in the two countries. Commenting on Mr Junejo's statement in this regard, an official spokesman said in New Delhi that there is no question of equating the nuclear programs of the two countries. While no one has said that the Indian nuclear program is weapon-oriented, there is no secret about Pakistan's intentions. [Text] [Delhi Domestic Service in English 1530 GMT 24 Jul 87 BK] /9274

MINISTER ON NUCLEAR PLANT SAFETY--The Lok Sabha was assured that all necessary steps are being taken for the safety of nuclear power plants. Replying to questions, the minister of state for defense, Mr Shivraj Patil, said indigenous technology has been developed for the safety of plants, such as by providing a double container and other devices. Replying to a question, the minister told the House that by the turn of the century 10,000 megawatt nuclear energy is expected to be produced. He said that total installed capacity of nuclear power plants is about 1,230 megawatts. [Text] [BK191032 Delhi Domestic Service in English 0830 GMT 19 Aug 87]

BILL ON NUCLEAR POWER COMPANY--The Rajya Sabha today passed a bill to enable the government to set up a nuclear power corporation or a government company for establishing and operating nuclear power stations. The minister of state for science and technology, Mr K. R. Narayanan, who piloted the bill, said the proposed corporation will have greater operation facilities and will be in a position to raise funds of its own. He expressed the hope that the corporation will become fully self-sufficient in financial resources within a few years and there would be no need of a government funding. The House also passed a bill to update the Parsi personal laws in respect of marriage and divorce. [Text] BK040428 Delhi Domestic Service in English 1530 GMT 3 Aug 87]

INTERNATIONAL NUCLEAR ACCIDENT AGREEMENT SIGNED

JN131802 Baghdad Voice of the Masses in Arabic 1500 GMT 13 Aug 87

[Text] Iraq has joined the countries signing the two international agreements on early warning and the extension of assistance in the event of a nuclear accident or radiation incident. The Iraqi ambassador to Austria signed the two agreements on behalf of the Iraqi Government in the IAEA headquarters in Vienna last night.

The signing of the two agreements, prepared by energy experts in August 1986, began at the end of the IAEA general conference held in the Austrian capital last September.

[James Dikelsh], the IAEA press spokesman, told the INA correspondent in Vienna today that the number of countries signing the two international agreements, which have gone into effect, totals 62 countries.

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CSO: 5100/4526

BRIEFS

NUCLEAR PROPOSAL TO SOVIETS DENIED--The West German weekly DER SPIEGEL reports that Minister Peres has offered the Soviet Union to negotiate a nuclear-free zone in the Middle East. DER SPIEGEL says Peres sent a secret message to Moscow after the Kremlin's warnings to Israel against developing the intermediate-range missile Jericho. The foreign minister was also said to have suggested direct talks with his Soviet counterpart Shevardnadze as a prelude to nuclear arms talks. The Foreign Minister's Bureau says there is no basis to DER SPIEGEL's report. [Text] [Jerusalem Domestic Service in English 0400 GMT 2 Aug 87] /8309

REBUILDING IRAQI REACTOR DENIED--French Prime Minister Jacques Chirac denies having offered to rebuild the Iraqi nuclear reactor destroyed by the Israeli Air Force 6 years ago. Chirac says that the letter he sent to Iraqi President Saddam Husayn, which was published by LE CANARD ENCHAINE, involves Iraqi payments for French weapons, not nuclear reactors. Our correspondent Gid'on Kouts reports that in a telephone call to Israel's Ambassador in Paris, 'Ovadya Sofer, Chirac said that when he took office as prime minister he undertook not to renew the nuclear reactor deal with Iraq. He added that no negotiations have been held with Baghdad on this issue since then. [Text] Jerusalem Domestic Service in Hebrew 0400 GMT 5 Aug 87] /8309

CSO: 5100/4525

SPOKESMAN ON NUCLEAR PROGRAM, MECCA INCIDENT

BK041128 Karachi Domestic Service in English 1100 GMT 4 Aug 87

[Text] Pakistan has reiterated that its uranium enrichment program is exclusively meant for peaceful purposes and it is prepared to accept binding contractual obligations and safeguards in the context of South Asian region. A Foreign Office spokesman told newsmen in Islamabad today that Pakistan would not accept any unilateral or discriminatory obligations or constraints with regard to its nuclear program. He said that this was conveyed to the American undersecretary of state for political affairs, Mr Michael Armacost, during his talks with Pakistani leaders in Rawalpindi and Islamabad. The spokesman said Pakistan feels that a unilateral renunciation by one country would not promote the objective of nonproliferation in South Asian region.

About the visit of the adviser to President Khamene'i of Iran, Mir Mostafa Salim, to Pakistan, the spokesman said he brought messages from the president and prime minister of Iran for the president and prime minister of Pakistan about the tragic incident in Mecca-e-Mukarram [holy Mecca] on Friday last. He informed the president and the prime minister about Iran's opinion with regard to the details of the incident.

Replying to a question, the spokesman said Pakistan is in favor of observance of the sanctity of the pilgrimage and that laws of Saudi Arabia must be fully respected. He said all the Muslim countries must intensify their efforts to prevent the recurrence of such incidents in Mecca-e Mukarram.

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CSO. 5100/4755

BENAZIR BHUTTO URGES PEACEFUL NUCLEAR USE

BK080930 Hong Kong AFP in English 0844 GMT 8 Aug 87

[Excerpt] Karachi, Pakistan, Aug 8 (AFP) — Pakistani opposition leader Benazir Bhutto has advocated the peaceful use of nuclear power in the country to produce energy and improve the economic well-being of the people.

In a statement released after her return Friday from London, the co-chairman of the Pakistan Peoples' Party (PPP) said the Pakistani Government should act to remove alleged confusion and uncertainty abroad about the country's nuclear programme.

Referring to a proposed suspension of U.S. aid to Pakistan, Miss Bhutto said: "On the one hand we take American aid with pride and on the other we do things that create apprehensions and doubts".

The U.S. House of Representatives this week passed a non-binding resolution to cut off military aid to Pakistan unless it proved it was not producing weapons-grade nuclear material nor attempting to acquire nuclear technology.

Miss Bhutto said: "We should use nuclear energy for peaceful purposes, for generating energy and economic well-being. If the programme is genuinely peaceful, the rulers should say so".

Both President Mohammed Ziaul Haq and Prime Minister Mohammed Khan Junejo have repeatedly stated that Pakistan's nuclear programme is entirely for peaceful purposes and the country has no intention of producing nuclear weapons.

Islamabad has responded to Indian allegations that it is manufacturing a nuclear weapon by offering mutual inspection of nuclear sites, but New Delhi has rejected this. [passage omitted]

/9274
CSO: 5100/4755

PAEC SAID AT 'HIGH LEVEL OF MATURITY'

Islamabad THE MUSLIM in English 4 Jul 87 p 8

[Text]

KARACHI, July 3: The peaceful nuclear programme of the Pakistan Atomic Energy Commission (PAEC) has reached a high level of maturity with increased input for the socio-economic development of the country.

Official sources told PPI here today that in the last decade, a number of research institutes and establishments dealing with agriculture, health, industry and minerals have been set up by the commission.

These breakthroughs have brought Pakistan closer to its cherished goal of attaining self-reliance in its peaceful nuclear programme. Today, Pakistan is regarded as one of the leading developing countries in the nuclear field, they said.

The PAEC's agricultural research centres have also contributed to the country's self-sufficiency drive in food. They have helped introduce new high yielding crops and helped to rid the farmers of many plant diseases.

The new variety of cotton Niab-78 has contributed very significantly to the bumper cotton crops for the past two years, the chickpeas GM-72 have helped stabilise production after it was reduced to half due to blight. Mungbean varieties have been responsible for an increase of over 15 per cent in the area under Mungbean. Now mungbean cannot only be cultivated as a spring and summer crop but also as a 'cash crop between the wheat harvest and rice transplant similarly due to Niab-78 wheat can be easily sown in time after the cotton harvest.

The Commission has also developed biological techniques for economically utilising saline land and established a biosaline research laboratory along with a demonstration farm near Lahore. It is also moving ahead towards the utilisation of radiation for preservation of food and other agricultural products.

Likewise in the power sector, the contribution of Karachi Nuclear Power Project(KANUPP) to the Karachi Electric Supply Corporation (KESC) grid is quite substantial.

The nuclear medical centres of the PAEC were providing succour and relief to over 125,000 patients of malignant diseases, including cancer, every year.The Commission has been active in the field of cancer therapy and nuclear medicine for the last 25 years. It has established eight nuclear medical centres in different parts of the country and the ninth one at Quetta is nearing completion.

Of greater significance, however, is the autarky Pakistan has attained in meeting its requirements for nuclear fuel and spare parts for KANUPP ,and important research and development advances in the nuclear fuel cycle.

The Commission through its own efforts has been able to meet the requirements of essential spare parts for KANUPP, fabricate nuclear fuel, produce essential materials like zirconium and operated its nulcoar power reactor safely and efficiently for the last 10 years.

The sources said that the Commission had also helped in building a broad scientific and technological base in the country and pave the way for large scale introduction of nuclear technology. The Commission for the last 30 years or so has been pursuing a research and development R and D programme oriented towards peaceful uses of nuclear energy.

A number of research establishments have been set up in different parts of the country. The major R and D is done at the Pakistan Institute of Nuclear Science and

Technology (PINSTECH) located near Islamabad which last year completed 20 years of its existence.

PINSTECH is not only the premier scientific research laboratory in the country but one of the leading centres of nuclear research in the Third World. It carries out research work in selected areas of primary interest and standards of research are kept at the international level.

The sources said that PINSTECH has carried out development work for all the major nuclear programmes in the country and provided the scientific manpower and leadership for the execution of the Commission's programmes.

PAEC has now set up its own training institutions which are producing high quality manpower to meet the country's basic requirements in many fields. The Centre for Nuclear Studies (CNS) has been offering a Master's degree course in nuclear engineering for the last 15 years besides holding short-term courses in health, physics, nuclear medicine, quality control and so on.

The nuclear engineering programme is being expanded and upgraded to Ph.D level. The Commission works closely with the University Grants Commission (UGC) in training of students and teachers in computer technology. At Karachi, PAEC trains its own engineers and technicians for the operation of KANUPP.

They said by far the major area for the application of atomic energy is the field of nuclear power. Pakistan has limited conventional energy resources and in spite of best efforts to fully utilise the hydro, coal and gas resources, the country faces a wide gap between supply and demand of electricity. This gap will widen as the population grows and economy develops. For this Pakistan has no choice but to turn towards nuclear power. It is for this reason that Pakistan was keen to establish new power reactors.

Being a developing country, it is difficult for Pakistan to master quickly all the diverse technologies related to nuclear power development, because of the time, investments and complexity involved. For trips it is keen to seek cooperation in the field of nuclear power from advanced countries under the safeguards of the International Atomic Energy Agency (IAEA).—PPI

/9274
CSO: 5100/4753

PETROSYANTS AT PRESS CONFERENCE LAUDS IAEA

LD271301 Moscow TASS in English 1151 GMT 27 Jul 87

[Text] Moscow July 27 TASS--Academician Andranik Petrosyants, chairman of the USSR State Committee for the Use of Atomic Energy, has expressed high appreciation of the work of the International Atomic Energy Agency. Speaking today a press conference held on the occasion of the 30th anniversary of IAEA, he pointed out that the Soviet Union would continue to actively cooperate with this organization in reaching the targets connected with the acceleration of the socio-economic development of all the countries and the prevention of the proliferation of nuclear weapons.

Touching upon the history of the creation of IAEA, Academician Petrosyants recalled that the USSR was the first of the great powers to ratify the IAEA charter, the organization which affiliates today 113 countries.

He said that IAEA devoted special attention to issues connected with a safe development of nuclear power engineering. In this connection he pointed out the promptness, understanding and extensive support rendered by IAEA for the measures taken in this country after the accident at the Chernobyl power plant. Hans Blix, IAEA director general, visited Chernobyl twice, in May 1986 and in April 1987. during his second visit he saw for himself what a great amount of work had been done by Soviet specialists for eliminating the consequences of the accident.

Academician Petrosyants recalled the initiatives put forward by the USSR in IAEA. They dealt with the study of new topical problems and with the development of an international regime of safe development of nuclear power engineering. Within the framework of a program put forward by the USSR in September 1986 IAEA adopted a convention on a prompt notification about nuclear accidents and on assistance in case of the accidents.

Speakers at the press conference answered questions about Soviet assistance to young countries in the sphere of nuclear engineering and prospects of the development of this industry in the USSR.

/6662
CSO: 5100/23

NUCLEAR NON-PROLIFERATION SOVIET STYLE EXPOUNDED

Moscow INTERNATIONAL AFFAIRS in English No 6, Jun 87 pp 28-61

[Excerpts]

The prevention of nuclear proliferation became a real possibility when the socialist countries began to exert decisive influence on the course of world events and won support from newly independent and some other states as well as progressive public forces for the restructuring of international relations in favour of increasing application of the principles of peaceful coexistence.

The Soviet Union did a very great deal to help prevent nuclear proliferation and reduce the war menace. It was the first to put on the international agenda the problem of raising a dependable barrier to nuclear armaments. This was also the aim of the Soviet proposals, first put forward as far back as the mid-1950s, for setting up nuclear-weapon-free zones. The Soviet Union played the leading role in drafting the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), which was a result of protracted and complicated negotiations in the UN and in the Geneva Committee on Disarmament. The NPT came into force in March 1970, and has since been signed by the overwhelming majority of countries (over 130). Today the number of signatories makes it the most representative international agreement limiting the arms race.[2]

The years that have passed since the appearance of the first signatures to the Treaty have shown that it is an effective international instrument and that the countries which have concluded it fulfil in good faith the obligations assumed by them.

Articles I and II of the treaty, which are its key provisions, contain reciprocal commitments by nuclear, and non-nuclear states. The former have committed themselves to abstain from transferring nuclear weapons or other nuclear explosive devices to anyone while the latter have bound themselves neither to manufacture nor to acquire nuclear weapons or other explosive devices of this kind. Such treaty obligations reliably close all channels and loopholes for the possible proliferation of nuclear weapons. This is confirmed by the fact that since the treaty came into force never has any one of the signatories been found to be violating either deliberately or inadvertently the provisions concerning non-transfer or non-acquisition of nuclear armaments. The annual report submitted by the IAEA to the 41st Session of the UN General Assembly says: "In 1985, as in previous years, the Secretariat, in carrying out the safeguards obligations of the Agency, did not detect any anomaly which would indicate the diversion of a significant amount of safeguarded nuclear material—or the misuse of facilities or equipment subject to safeguards under certain agreements—for the manufacture of any nuclear weapon, or for any other military purpose, or for the manufacture of any other nuclear explosive device, or for purposes unknown."

The implementation by states of the Treaty on the Non-Proliferation of Nuclear Weapons is supervised with the aid of an integrated control system, namely, the IAEA safeguards system. This is done by keeping track of the flow of fissionable materials and preventing their diversion

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[2] We may note by way of comparison the following data released by SIPRI: in 1986 the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space, and Under Water (1963) involved 115 countries; the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction (1972), 103 countries; the Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Subsoil Thereof (1971), 76 countries; the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (1977), 48 countries.

from peaceful production to the manufacture of nuclear weapons or other nuclear explosive devices. The countries concerned are obliged to submit to the Agency information on the design of installations, records and reports on the movement of nuclear materials and to assure it the right to carry out independent inspections of nuclear materials placed under its control.

Needless to say, supervision of the implementation of non-proliferation measures is restricted to non-nuclear countries, since it is evident that from the point of view of preventing the spread of nuclear weapons all over the globe, there is no point at all in establishing control over the peaceful uses of atomic energy by countries possessing nuclear weapons.

Nevertheless, many non-nuclear countries proposed that in accordance with the non-proliferation regime not only they but the nuclear states should place some of their nuclear power installations serving peaceful purposes under IAEA control. On this issue too, the Soviet Union expressed its readiness to meet non-nuclear countries half-way. As an act of goodwill, it put several of its nuclear power stations and research reactors under IAEA control by signing a relevant agreement, which came into force on June 10, 1985. In August of that year, the IAEA began to conduct inspections on Soviet territory.

The IAEA exercises its control with due respect for the sovereign rights of countries. To reduce the presence of international inspectors to a minimum, the Treaty provides for the application of safeguards where possible by automatic ways and means of control corresponding to the development level of science and technology. These means are in use already, and subsequently they will be used on an increasing scale.

Under Article III of the Non-Proliferation Treaty non-nuclear states shall conclude agreements with the IAEA on safeguards stipulating the establishment by the Agency of control over all nuclear activities on the territory of these countries. By late 1985 there were 163 such agreements with 96 countries placing 889 nuclear installations under IAEA control. In 1985 the Agency carried out 1,981 inspections. However, some countries, such as Israel and South Africa, are operating nuclear installations that are not covered by IAEA safeguards.

Speaking generally, however, the experience gained in applying the safeguards since the Treaty became effective has shown the control mechanism of the Treaty to be functioning reliably, without violating the sovereign rights of states in the least or impeding the latter's utilisation of atomic energy for peaceful purposes.

The Soviet Union is taking an active part in international inspection. Soviet experts are devising new and more effective control methods for the IAEA and are training its inspectors. Part of this work is carried out on Soviet territory.

To prevent nuclear weapons proliferation, it is also very important to adopt measures making impossible the development of nuclear weapons by countries which for some reason or another have not signed the NPT. Article III(2) of the NPT is intended to play an important role in this respect, for it prohibits the signatories from providing fissionable materials or special equipment to any non-nuclear state, including non-signatories, unless the requisite safeguards cover these materials and equipment. In August 1974, the Soviet Union, the United States, Britain, the FRG, Canada and other countries exporting fissionable materials and equipment reached a formal accord on the implementation of the above provision.

Early in 1976, some of the main exporters of nuclear equipment, materials and technology, including both signatory and non-signatory states, came to terms on the application in their nuclear export policy of a number of important principles contributing to non-proliferation of nuclear

weapons. This group of exporters is known as the London Club because it met in London. Its 17 members include the Soviet Union, the United States, Britain, France, the GDR, Czechoslovakia, Poland, the FRG, Japan, Canada, Italy and Sweden.

A further step towards averting proliferation was taken by working out an international Convention on the Physical Protection of Nuclear Material in using, storing or transporting it. The convention was opened for signing in 1980. It is directed against what is occasionally described as "subnational" proliferation of nuclear weapons. Its purpose is to foil likely attempts by individuals, terroristic organisations or criminal groups to steal fissionable materials and use them as a means of, say, political blackmail, financial extortion, and so on. However, the convention's coming into force has been delayed for no justifiable reason. Further efforts are needed to put this important document into force at an early date. The Soviet Union is among the first countries to have signed and ratified it. The convention should operate as a factor for nuclear security. A reliable set of measures should be adopted to prevent nuclear terrorism in any form.

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The Non-Proliferation Treaty prohibits non-nuclear countries from developing and producing nuclear weapons or other explosive devices, that is, imposes serious restrictions upon them. Could this lead in the course of implementation of the NPT to limiting the use by countries of the enormous advantages which achievements in nuclear physics and technology offer them?

The more than 16-year experience of the period during which the treaty has been in force proves that the measures aimed at ensuring compliance are no obstacle at all to international cooperation in the peaceful uses of atomic energy. Indeed, it is only the provision of reliable safeguards against proliferation that will enable states to cooperate on a mutually beneficial basis in the peaceful uses of the atom. This is confirmed by increasing technical aid from the IAEA to developing countries in this field. From the time the treaty was signed to 1985, this aid grew from $4.2 to $38.1 million. In 1985 it was distributed as follows: Asia got 28.3 per cent; Latin America 22,8; Europe 13.1; Africa 20.8; and the Middle East 1.6 per cent; another 13.3 per cent was allocated for interregional projects.

The Soviet Union calls for wider international cooperation in the peaceful utilisation of nuclear power provided it precludes increased opportunities for developing nuclear weapons. Our country has for years rendered a number of countries assistance in enriching their natural uranium at Soviet installations and cooperated with them to this end in some other forms as well. It has been increasing its voluntary contribution to the IAEA technical assistance fund; in the 1975-1987 period its contribution increased from 500,000, to 3,434,000 rubles. This money is drawn on to deliver Soviet equipment, instruments, installations and materials to developing member states of the agency, train fieldworkers holding IAEA grants, set up courses of instruction in the Soviet Union, organise study tours, and so on.

The accidents at the Chernobyl APS and at atomic power plants in other countries revealed the urgency of safety measures in the nuclear power industry. The conclusion drawn by the Soviet Union was explicit: the industry must develop in conditions assuring people maximum safety and environmental security. The painstaking and exhaustive analysis of the causes of the Chernobyl accident carried out by our experts showed how the problem can be reliably solved.

Proceeding from this analysis, the Soviet Union worked out detailed proposals for setting up an international system for the safe development of nuclear power production on the basis of close cooperation between all countries and submitted them to a special session of the IAEA General Conference last autumn.

The Soviet action programme whose key components were formulated by Mikhail Gorbachev on May 14 and June 9, 1986, met widespread support in the world. The programme calls for a set of measures to provide a scientific and technological basis for the development of the nuclear power industry. Their realisation by the joint efforts of all countries should make it possible to meet humanity's growing demand for energy by using nuclear energy.

The special session held by the IAEA in the autumn of 1986 approved two international conventions: on prompt notification of, and on rendering aid in, nuclear accidents. These documents lay an international legal groundwork for the safe development of nuclear power production. They certainly necessitate growing international cooperation and enhance the role and responsibility of the IAEA in this matter so important to the whole world.

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The past 16 years have seen the implementation of a series of both multilateral and unilateral political and legal measures intended to avert proliferation of nuclear weapons. These measures and the international practice that has taken shape on their basis determine at present the international regime of non-proliferation based on the relevant treaty, which on the whole has proved its viability and effectiveness. While pointing out the stabilising value of the non-proliferation regime, we must stress, nonetheless, that the present complicated stage in international relations objectively calls for new and far-reaching steps to reinforce the NPT.

What are the more pressing tasks in making the international non-proliferation regime more effective?

One of the main tasks is, now as before, to ensure that the NPT is signed by still more countries. So far about 30 countries, including two nuclear powers (France and China), have failed to join it. The adherence of further states has slowed down of late. It is particularly disquieting that roughly a dozen "near-nuclear" or "threshold" states are reluctant to accede to the treaty. Among them are Israel, South Africa and Pakistan, which make no secret of their nuclear ambitions.

At present, it is from the "threshold" countries that the chief danger of proliferation emanates. The threat posed by the acquisition of nuclear weapons by even one of these countries would not be limited geographically, for such a development would cause a chain reaction and lead to the appearance of nuclear arms in other non-nuclear countries, whether in the Middle East, South Asia, Latin America or elsewhere. And this would inevitably increase the danger of use of nuclear weapons with universal, global implications. Therefore the chief task is to prevail on the "near-nuclear" countries which have not signed the treaty as yet to do so.

Another major task is to steadily perfect the IAEA safeguards system, to make it more effective by providing it with greater technical facilities and improving the work of inspectors.

Lastly, it is highly important to tighten control over nuclear exports, examine their every aspect and normalise their terms to the point of putting all nuclear activity in any receiving non-nuclear country under the Agency's control and to extend coordinated control measures to all exporters of nuclear materials, equipment and technology.

Proper solution of the problem of non-proliferation is not easy, of course. It requires full consideration of the interests of a wide range of large and small, nuclear and non-nuclear countries. However, it is essential that all interests be dominated by awareness of the disastrous effects which a nuclear war would have on all nations. And this implies that averting such a development, preventing the use of nuclear power as a means of destruction, must be the common objective of concerted efforts by the whole world community.

What comes to the fore in this context is the constructive aspect of the Treaty on the Non-Proliferation of Nuclear Weapons, which not only provides for the stabilisation of the composition of the "nuclear club" but urges its members to reduce their nuclear armaments. For while this document is aimed primarily at preventing "horizontal" proliferation, i. e., the emergence of new nuclear states, it is by no means isolated from other measures aimed at curbing the arms race and bringing about disarmament. One of its key objectives is to contribute to progress in this sphere. Hence the provisions directed towards preventing "vertical" proliferation as well, or, in other words, cutting the existing nuclear arsenals. Under Article VI, over 130 countries have for the first time pledged in line with an international accord to hold negotiations on a vast spectrum of disarmament problems.

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The Soviet attitude to the problem of non-proliferation was set out in explicit terms in the message which Mikhail Gorbachev sent in August 1985 to the participants in the Non-Proliferation Review Conference. "True to its obligations under the treaty," the message said in part, "the Soviet Union has been doing and will do all in its power in order not only to prevent proliferation of nuclear weapons but to stop the nuclear arms race and turn it back." This statement was confirmed by concrete deeds and a whole number of wide-ranging initiatives among which the programme for the complete and universal elimination of nuclear weapons (made public on January 15, 1986) holds a special place. Bona fide and equitable cooperation between all countries in a phased realisation of this programme would make it possible to bring about nuclear disarmament and put peace on a dependable basis in a nuclear-free world by the end of this century.

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CSO, 5100/024

BRIEFS

PAKISTANI ARRESTED OVER NUCLEAR STEEL SHIPMENT--New York, 13 Jul (TASS)--
A certain Arshad Pervez, a native of Pakistan, was arrested last Friday in Philadelphia, USA, on charges of trying to send to Pakistan a shipment of special steel used in making nuclear weapons. During an interrogation Pervez agreed that the shipment of steel manufactured by the Carpenter steel corporation was going to be used in "a gas-centrifuge enrichment plant to make nuclear weapons", the AP news agency reported today. U.S. newspapers note that Pervez's arrest and his testimony provided new evidence to the effect that the Pakistani regime is speeding up the development of its own nuclear weapons which are probably close to completion. It is noteworthy, that all the technology and equipment needed for the manufacture of nuclear weapons were obtained by Islamabad, either secretly or openly, in Western countries. [Text] [Moscow TASS in English 1212 GMT 13 Jul 87 LD] /12624

CSO: 5100/21

UNAPPROVED EXPORTS OF NUCLEAR TECHNOLOGY ACKNOWLEGED

Duesseldorf HANDELSBLATT in German 3 Aug 87 p 14

[Text] In separate instances between 1981 and 1983, German firms exported uranium enrichment equipment abroad without obtaining the necessary approval. This information comes from the Federal government's response to the question of atomic exports to Pakistan. According to the government, however, there are no grounds to show that technology for nuclear facilities was then re-directed to Pakistan. Since 1986, however, a German firm has been under investigation on suspicion of having delivered construction plans for uranium enrichment facilities to Pakistan by way of Switzerland.

51002459

NUCLEAR ENERGY AGREEMENT DRAFTED WITH GDR

DW290838 Bonn DIE WELT in German 28 Jul 87 p 4

[Diethard Goos article: "Sides To Inform Each Other About Accidents..."]

[Text] Bonn — Bonn and East Berlin have reached agreement on the exchange of information and experience on facilities for the peaceful uses of nuclear energy. The agreement will be initialled on 4 August and will be signed along with the environmental protection agreement in a ceremony during SED chief Erich Honecker's visit to Bonn. The agreement, available to *Die Welt*, is the result of conclusion drawn from the Soviet reactor accident in Chernobyl in late April last year.

The preamble of the agreement on the "exchange of information and experience in the field of radiation safety" refers to the basic treaty of 21 December 1972, readiness for the development of good-neighbor relations, the CSCE Final Act of 1 August 1975, the statement on the CSCE followup meeting in Madrid, and the international agreement of 26 September 1986 on early notification of nuclear accidents (the treaty on the consequences of Chernobyl).

Article 1 says:

"(1) The sides should inform each other without delay about accidents pursuant to article 1 of the agreement of 26 September 1986 on early notification about nuclear accidents.

"(2) Such information is to be supplied directly, according to the provisions of Article 5 of the agreement of 26 September 1986 on early notification of nuclear accidents. To that end both sides should name the authorities responsible for such notification."

Article 2 says that both sides should inform each other in the same way about unusually high radioactivity counts "which does not result from a nuclear powerplant accident or from some other activity at its site."

Article 3 is very important:

"(1) The two sides should consult each other about the general development of the peaceful uses of nuclear energy, in particular on the legal bases, and about the methods and results of protection from radiation of persons working in the field of radiation protection, of the people, and of the environment.

"(2) The two sides should inform each other about their nuclear reactors, nuclear fuels exposed to radiation, and nuclear waste disposal.

"(3) The information in paragraph 2 about planned facilities should be supplied once official approval to set up such facilities has been given. Both sides should inform each other when nuclear facilities are put into operation."

Article 4 requires regular consultations by experts. In general, the documents exchanged can be used without any conditions if neither of the parties to the agreement insists on confidentiality.

Article 6 contains the Berlin clause, which uses the Frank-Falin formula and was also employed in the cultural agreement and in the agreements on environmental protection cooperation and science and technology: "In accordance with the four-power agreement of 3 September 1971, this agreement is extended to Berlin (West) according to the agreed procedure."

A catalogue listing the information that has to be provided is a component part of the radiation protection agreement. The list includes names and sites of nuclear facilities, data about the owner and sponsor, and details of their purpose. In addition, the two sides should inform each other about the status and operation of the respective facilities. Regarding nuclear reactors, information is to be exchanged on each reactor type, its output, nuclear fuel, loading and enrichment, consumption and capacity of fuel elements. Both sides should also inform each other about the reactor pressure container, coolant, steam production system, admissible radioactive emission values, and details on the reactor safety technology used.

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CSO: 51002460

RADIATION PROTECTION AGREEMENT SET WITH GDR

LD041039 Hamburg DPA in German 0931 GMT 4 Aug 87

[Excerpt] Bonn (DPA)--The Environment Ministries of both German states today agreed on a radiation protection agreement in Bonn. It regulates the exchange of information and experiences on radiation protection and is to be signed during the visit by Erich Honecker, chairman of the GDR's Council of State. According to the Bonn Environment Ministry the agreement ties up with the Vienna agreement on immediate notification in the event of nuclear accidents, which was agreed by many states in the wake of the Chernobyl reactor disaster in September 1986.

The agreement with the GDR regulates the mutual exchange of information and experiences on the development of the peaceful use of nuclear energy. The FRG and the GDR intend to inform each other of "unusually high measurements of radioactivity which cannot be traced to nuclear accident on their territory." The Bonn ministry announced that an exchange of information on results and methods of monitoring radiation protection, on plants for irradiated fuels, and the storage of nuclear waste as well as on the intended start up of nuclear installations was also agreed.

In an appendix to the agreement it is exactly laid down what technical data will be exchanged on nuclear power stations and nuclear waste dumps. Where reactors are concerned this means the type, the output, details of the enrichment of fuel, the control and regulation, the coolant and its circulation, the steam generator and the permitted levels of radioactive material allowed into the environment. Apart from this, the exact location of nuclear reactors and nuclear dumps, their owners, managers, and method of functioning must be announced. This is also valid for stores of irradiated nuclear fuels. Neither state intends to inform the other about new nuclear plants until after the relevant permission to build has been given.

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CSO: 51002460

RADIATION CONTAMINATION OF NEW CROP TEA

Istanbul DUNYA in Turkish 13 Jun 87 pp 1, 6

[Excerpt] Ankara (ANATOLIAN AGENCY) - The new crop of tea failed to escape contamination by radiation. Industry and Trade Minister and Chairman of the Turkish Radiation Safety Committee Cahit Aral said that the amount of radiation in new crop tea is approximately half 1986 levels.

Answering questions about radiation in tea, the industry and trade minister said that the level of radiation in new crop tea has dropped to one-thirtieth of last year's levels in some places and one-two hundredth in others.

Aral gave the following figures in relation to radiation contamination of the new crop:

"According to the latest figures that we received on Thursday, the highest per-kilogram level of radiation in the new crop tea is 2,200 becquerels, and the lowest is 120-130 becauerels. Because the radiation level of new tea is this low, we decided not to use any of the 45,000 tons of highly contaminated tea from the old crop which is in storage."

Aral explained that 45,000 tons of tea had not been sold but placed in storage last year because of its high radiation content and that the consumer definitely would not use this tea.

Aral said, "In addition to our oral instructions that this tea not be used, we will send a written notice to the Finance and Customs Ministry on Monday."

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